## Space Weather Forecast

Issued on Sunday, 28 November 2021 at 12:32 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: No significant activity expected.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity was very low, with just minor flares detected. There are currently three sunspot regions on the sun's visible side, all with simple magnetic configurations at this stage. A large filament region in the sun's southeast quadrant remained stable during the period, but a further filament in the southwest erupted around 28/0200-0400 UTC, however no associated coronal mass ejection (CME) was seen. No other Earth-directed CMEs were evident in available imagery.

**Solar Wind / Geomagnetic Activity:** Solar wind measurements indicated a weak CME arrival around 27/2150 UTC, with background speeds showing a sudden increase from 310 to 380 km/s, and becoming slightly elevated for a time 28/0200-0700 UTC, reaching 415 km/s at 28/0432 UTC. The solar wind's magnetic field became moderate to strong after the CME arrival, with some more notable negative deflections in the important north-south direction 28/0100-0200 UTC. In spite of the CME arrival, resultant geomagnetic activity remained at Quiet to Unsettled levels (Kp0-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**
**Solar Activity:** Solar activity is expected to be low or very low, with a chance of C-class flares from either of the two more complex active regions currently visible.

**Solar Wind / Geomagnetic Activity:** A CME from a filament eruption early on the 26 Nov has now been reassessed as likely missing, but with low confidence, giving a small chance of some impact at Earth late day 2 or day 3 (29 or 30 Nov). There may also be weak additional coronal enhancements to the solar wind. Otherwise, slightly disturbed conditions from a weak CME arrival on 27th are expected to settle through day 1 (28th). Geomagnetic activity is likely to be Quiet to Unsettled, with a chance of isolated Active intervals at first, and again if we do see any effects from the second CME later in the period.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms observed.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 5 | 10 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 5 | 5 | 5 | 5 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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